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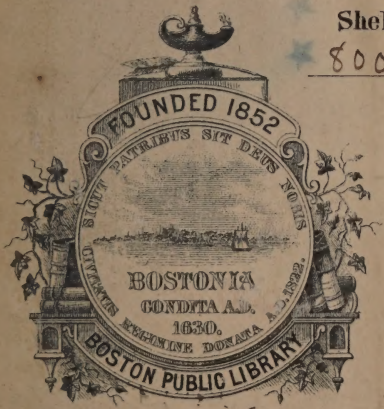

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What & Why

Compliments of
Albert A. Pope.

WHAT & WHY

SOME

COMMON QUESTIONS

ANSWERED

BOSTON:
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P. R.
to
B. H.
Feb. 7, 1894.

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1884.

PREFATORY NOTE.

"One fool can ask more questions than ten wise men can answer," runs the adage, and doubtless he can; but he never did. It is the wise man who asks questions, that he may find out and add to his wisdom. The genuine fool apes too much wisdom to ask what he don't know; while the wise interrogates, and, not finding an adequate reply, will seek out the answer.

Within these leaves are some words of the wise and some queries to help the foolish. This little compendium of information has been prepared with an earnest endeavor towards correctness, to fill a place yet unoccupied, to interest its readers more and more in the general subject of it, and to save time consumed in conversation and correspondence, by answering the same questions over and over so many times.

It is believed that here are also some things which are fresh even to the well-informed, and that every one into whose hand this may come will find something to repay him for a perusal.

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WHAT AND WHY.

A Preparation of Iron.*

I.

THE apothecary was puzzled. He had long ago served an apprenticeship in one of the oldest drug-stores in Philadelphia; and now for several years he had been the head of Brown's Pharmacy in Chevauxville, with a reputation for skill and learning. He was guiltless of any knowledge of classic Latin, and possibly that was to his advantage as a compounder and dispenser of medicines; but he could read the conventional recipes of the physicians at sight, with all their varied mysterious abbreviations and illegible script, and his bottled shelves and scented drawers held resources for all heard-of compounds. When he unfolded the prescription just handed him he glanced at it with an air of wisdom, brought his spectacles down from his forehead to his nose, and recognized the penhand of one of the rising young physicians just gaining a practice in town, to the following effect: —

* From *The St. Louis Magazine*, of April, 1882.

FRANK ELDER'S PHARMACY,

Main street.

℞ Ferri incarb. birot. ad memb.
longit. circ. lb. xxxvij
Commis caoutch. in annul. du. ℥ lxxij
Id. id. pedalifer. ℥ viij
Porc. cutis preparat. susp. ℥ ivss.
Com. bov. Siami. q. s.
Unct. sperm. et petrol. ref. āā f℥ ij
Agit. pluck et gumptione.
Sig: Use externally twice a day for one or two hours.

Mr. Brown stroked his chin as he glanced now at the paper and now at the young man who had presented it; inquiring at the same time, as if to aid in understanding the recipe:—

"This for yourself, Mr. Lovell?"

"Yes, sir," replied the latter.

"H'm. Been ailin' long?"

"Yes, more than a year."

"Been to Dr. Sisson before?"

"No; I have had Dr. Durham before. Didn't get much better; thought I'd try another. Isn't that prescription all right?"

"What's Dr. Sisson treatin' you for?" pursued the apothecary, not heeding his customer's question.

"Well, I don't know exactly," said Lovell, as he sank on a stool. "I have had bilious attacks, and

a slow fever, and didn't get up well. I had no appetite; grew dyspeptic; couldn't sleep nights; you see I've got generally run down and unfit for business, and yesterday I had to give up my place, because I couldn't stand the strain any longer. It's no use; I must either get stronger, or go away somewhere,— perhaps to the graveyard."

Clarence Lovell looked a confirmation of what he said. He was of manly mould, some twenty-five years of age, but haggard, pale, and thin-chested, and a portrait of physical discouragement. The apothecary was still puzzled. His queries had elicited no aid in reading the prescription to his satisfaction. Dr. Sisson must be either very learned or very erratic. Tossing the recipe with some impatience over to his clerk, Mr. Brown retired to his desk. A broad smile passed over the face of the clerk. He noticed the erasure of "Brown's" from the top of the slip of paper, and the words written over it, and read the line aloud: —

"Frank Elder's Pharmacy, — why, that's the Bicycle School further up the street. This calls for a preparation of iron, etc., not yet in the regular *materia medica*," he added, as he took a copy of the mysterious Latin. The clerk had taken something of the same course of treatment, and looked knowing, as he directed the customer to the right place.

Chevauxville was right smart of a place, as some of its residents claimed. Some two miles

out from the centre of the village, on a fine road, and with all the appearances of thrift and good taste, was the home of Belle Richmond. Her father was the wealthiest man in the town, his business the most flourishing, and his residence the finest. Clarence Lovell had been in his employ five years, and had been advanced, from time to time, until he was head book-keeper and cashier. He had recognized the diligence, assiduity, and ability of the young man, and had, without being at all profuse in encouragement, meditated his advancement to a position of more responsibility and more income. He had even suspected, and taken no direct means to resist, young Lovell's approaches toward a closer acquaintance with Miss Richmond; though there was small need, apparently, for his exercise of choice in the matter, as her attractions were not unnoticed by two other promising young gentlemen, and her favor was shown rather evenly to Dr. Sisson and Ned Reemlin.

But Clarence now met with reverses. He had lost his health and his business position; and he had, morever, lost position in the game of love, wherein he had hoped to capture the queen, and then mate in two moves.

Frank Elder, a young man of good education and pleasing address, for three years previously a school-teacher, had just opened, in Chevauxville, a bicycle agency and riding-school. He had rented a hall of

moderate size in the middle of the village, procured a dozen shining "Columbias," sent out his circulars to every house in town, and advertised in all the county papers. Already he had acquired a considerable evening attendance of the curious and the patronage of a few earners, some of whom could now accompany him on afternoon spins to neighboring towns. The first of these graduates was Dr. Sisson. His medical education and experience had enabled him to appreciate quickly the hygienic effects of bicycling. Possibly there was also a stroke of professional enterprise in his adoption of the (for that place) novel chariot; it was well suited to save him horse and carriage hire (for he did not yet own an equipment), and, moreover, to draw public attention to him and his professional availability more completely and effectively than any electric sign or night transparency. The name and exploits of the Mounted Doctor, the Medical Centaur, the Flying Surgeon, were on every one's lips.

When Lovell inquired in a wondering way for Mr. Elder, the pharmacist, and presented interrogatively that mysterious slip of paper, the genial proprietor of the new medicine took in the opportunity at once. His pedagogical Latin was little taxed for interpretation of the lines. The particular preparation of iron, or rather of steel and rubber, was produced to the astonished customer with such assuring explanations, and such attractive descriptions of the

effects of the treatment as applied to others, that Lovell had not only taken the first dose before he left the hall, but had promised to "use as directed" — twice daily for one or two hours.

The ease and grace with which the "pharmacist" mounted and dismounted, sped and circled and disported about the hall, and controlled the rapid wheel as if it were a docile but quick-nerved, sinewy thing of life; the beautiful structure of the Columbia bicycle, and its seeming paradox of equilibrium, fascinated the "patient" at once. Perhaps it might really prove for him the wheel of health, if not of fortune.

II.

A meet of the Chevauxville Bicycle Club was called for eight o'clock in the morning of a pleasant day in June, on the outskirts of the village. The sound of the buglet was heard, its impetuous notes stirring the morning air with the regulation summons for a mount and run. The casual passer-by saw sixteen young gentlemen wheel their bicycles into line on the fine gravel roadway; some of them like raw recruits in their shirts and long pantaloons, and some like regulars on dress parade with their new club costume of brown cap, jacket and knee-breeches, and gray stockings.

"Ring yer bell!" shouted a small boy from the sidewalk as the last one filed away; and another of

the irresponsibles shied a ragged hat at the passing wheel.

"Say, fellers!" remarked a better dressed ten-year-old, as he slowed up his wooden three-wheeler, "those are rich ones, they are! Their v'lossipeeds cost a hundred dollars."

"Yes,'n' papa's goin' to buy me one for Christmas; they go faster 'n' the cars," chimed in an older one, who bore a strong resemblance to Mr. Richmond.

It was three months since Clarence Lovell had begun to take the preparation of iron. The few falls and awkward manœuvres incident to his first few rides were insignificant except as incentives. He had the nerve and the delight of conquest. He knew the floundering first plunges of the swimmer, and the staggers and tired ankles of him who first buckles on the skates. The "pluck and gumption" required by Dr. Sisson's prescription were not wanting; the patient was now hale and hearty, his carriage more erect, and his muscles and chest developed. He filled out the club costume with a handsome manly figure, and rode gallantly as first lieutenant and in command. * * *

"Form twos — ride!" was the half military order heard at the front when the clear open road was reached; and, as the bugler sounded the order, there was a movement along the lines for a moment, and the mounted wheels twinkled in pairs.

"Advance left — form fours — ride!" commanded

the lieutenant, and four abreast the riders and their steel chargers sped along the lake-side toward the open country.

About three miles out from the village, marked by some sturdy oaks and two large farm-houses, was "the four-corners," where the riders were to turn to the northward for a few miles of smooth, wide, and level country road. As they approached the crossing road, they were alarmed by the cry of a young lady in distress, and rattle of hoofs and wheels.

"Oh, let me jump! Let me jump! What shall we do?" were the half-frantic words, interrupted by a masculine voice, — "Sit quietly till I tell you,"— which reached Lovell's ears, as he saw a carriage dash before him. It was a runaway. The driver held one rein; the other was dangling loose on the spirited horse.

Clarence took in the situation at once. The appearance of the wheelmen had deterred the horse, now beyond control, from turning toward the village and causing an overset. The speed was too high for the driver safely to draw on the single rein, and guide the hurrying animal to a fence. Quick as thought he gave the command for "single file, right turn, double quick," and, putting swift feet to pedals, led the chase. Fast flew the running horse. Faster sped the pursuing wheels. A mile was covered in the hot race, and the two steeds were neck

and neck. A moment more and the wheelman shot ahead. Waiting for but a slight lead, he lifted his feet from the pedals, reached for a firm toe on the step, and, as the runaway came up, sprang from his bicycle, seizing the horse by the bridle-reins, and soon bringing him to a stand. The capture was complete.

"Oh, you are so brave! How shall we thank you enough?" exclaimed Belle Richmond.

None amongst the wheelmen, as they came up to the rescued team out of breath, and glad to dismount, manifested greater interest in the safety of Miss Richmond and her father than did Ned Reemlin, for he, too, was one of "the club," and was amongst the foremost at the scene. Whilst Lovell was aiding the father to quiet the horse, and join the broken rein, his rival was informing Belle of the object of the excursion, the roads they were to take, and the place where they should halt for dinner. He did not notice the mingled surprise and interest in the recognition of Clarence as the hero of the occasion by the former employer and his beautiful daughter. * * * The line was formed, the command to mount was obeyed, and the silent-hoofed cavalry made toward Waxenhaven, yet fifteen miles away.

Blooming green of fields, and warm foliage of trees whose branches scarcely waved in the early summer breeze, winding streams and smiling ponds,

picturesque bits of landscape and ever-shifting stretches of scenery before them, — all delighted their senses. There was exhilaration in the wholesome air and the free motion of their limbs, and their spirits rose above the level of every-day restraints. Song and humor and repartee beguiled the way. There were two or three dismounts, — to gain a view from a hill-top, to refresh with draughts of milk, to visit a ruin, — and at last they rolled along the main street and dismounted at Gulliver's Inn and stacked wheels for a rest and a dinner.

Scarcely had the wayfarers laved hands and faces, and dusted costumes, before they were summoned by the attentive landlord to the dining-room, where sixteen plates were laid, and other evidences of forewarned preparation were apparent, much to their surprise. There was no hesitation in sitting down, however; and the display of appetite was equal to that of the edibles. Who that has not pushed the wayward pedal up hill and down dale for two or three hours can understand the luxury of eating?

When the dishes were removed and the cups of coffee were brought on, the surprise of the preparation was explained. Relying on the known resources of the house the guests had sent no word ahead of their coming. But a telegram from a friend had been received, bespeaking the hospitality of the host for "Mr. Lovell and fifteen friends";

and now a receipted bill for the dinner was laid at Lovell's plate, running to "D. V. Richmond, Dr."

The home return, after a siesta and a walk around town, was by a different route, and full of pleasure to the wanderers. The afternoon shadows were growing long as they approached a town adjoining Chevauxville. Here one of those "hogs," usually found in the trail of an inferior horse, which in scattered instances still infest the common highways, was overtaken.

"Room on your left, please," politely called the leader, as he led his company up behind an unloaded team where the beaten road was narrow for a short distance, and the margin rough. The request was answered with a profane suggestion that "them things have no business on the road, and would get run down whenever he could do it." When two or three of the riders had passed by careful riding, and barely escaped a cut from his whip, he drew quickly to the left and fouled one of their number, causing him an unwilling dismount, but, fortunately, no damage. A whistle of distress from the fallen rider caused those before him to turn and blockade the road, while two of those behind him sprang up behind the driver and seized his whip. The apothecary's clerk was executioner. One lash was administered to the driver, stinging him severely, and a lighter one to the horse, which started thereat upon a brisk trot, pursued by the wheelmen. Every

few moments for a mile or two the approaching executioner laid on the lash to the helpless driver; and whenever he succeeded in slowing up his horse, a stroke at the flank would renew his speed.

Forty stripes, save one, were dealt to the offender, when the wheelmen tossed him back his whip, and, making a unanimous "spurt," left him to his reflections.

There was a halt for crackers and soda lemonade five miles out from Chevauxville; and just as the moon rose nearly full over the eastern tree-tops, the wheelmen mounted in good order for the "home stretch" of their fifty-mile excursion.

If there is anything more charming in bicycling than a morning run it is a quiet evening spin by moonlight. The stillness unbroken by the soundless wheels, the absence of dust and wind, and the coolness of the air, the weird and shadowy charms of the landscape and street vistas, make it delightful to the imagination as well as to the senses.

For some unexplained reason Clarence Lovell had resigned the lead to Reemlin at the last mount, and was thoughtfully riding at the rear.

There was a click of mallet and ball in the grounds of the Richmond mansion as the wheels rolled by, and the thoughtful rider caught the words of a gentle soliloquist within the hedge:—

"I wish I had a partner."

"And I wish I had, too!" replied Clarence, gal-

lantly raising his cap as he wheeled up the driveway and dismounted on the lawn.

The game was croquet, but Clarence did not miss the wicket, nor Belle remain a rover.

III.

One day in October there was a bicycle seen leaning against the little stone church in Chevauxville. Dr. Sisson had stopped long enough on his daily round of visits to attend a wedding in which he took a peculiar interest.

Fifteen other bicycles were stacked on the church green, and their owners, in fresh club costume, were attending a wheelman's marriage inside. For that day Clarence Lovell and Belle Richmond took matrimonial vows.

Thus had the preparation of iron prescribed by Dr. Sisson proved its efficacy. The patient had found the bicycle indeed a wheel of fortune, for health and happiness were his. And perhaps wealth too has been added, for Clarence Lovell's "Columbia" often stands now at the door of Richmond & Lovell, bearing on its silver name-plate a motto from the prescription, —

Agit. pluck et gumptione.

Charles E. Pratt.

Common Questions Answered.

DEFINITIVE.

Question 1. What is a velocipede?

Answer. A carriage propelled by the feet of the rider.

Q. 2. How long have velocipedes been in use?

A. More or less, and in different forms, for a hundred years.

Q. 3. Are they much used now?

A. They are, in several different varieties, in nearly all civilized countries, to the number of hundreds of thousands.

Q. 4. Are, then, all carriages propelled in whole or in part by the rider properly termed *velocipedes?*

A. No, not exactly; for there have been and still are many varieties of vehicles propelled by the hands of the rider, and a corresponding name for this class is *velociman;* they have been well called *manumotive carriages*, and by other names. Velocipedes are pedimotive carriages.

Q. 5. What was the origin of this generic name, velocipede?

A. Prior to 1816 the French applied the term *vélocifère* to certain carriages drawn by animals. When, at about that date, the first comparatively practicable and considerably used vehicle propelled by the feet of the rider was introduced into that

country, they soon gave it the corresponding name, *vélocipède*. By common and long-continued usage, that term acquired, in nearly all the modern languages, a sort of generic meaning, while the different species of velocipedes have their more specific names.

Q. 6. What are the principal species of velocipedes?

A. Bicycles, tricycles, quadricycles, and monocycles, are the principal species, and each has several varieties. Another species includes the various water velocipedes. There are also several varieties of so-called "safety" machines, most of which have but two wheels, variously arranged, and which are as widely distinguishable from the above-named species as they are from each other.

Q. 7. What is a bicycle?

A. It is a velocipede having two wheels in the same plane, one of which is both driving and guiding wheel, and which is operated directly by a cranked axle and pedals and a swivelled fork and handle-bars connected with the same wheel.

Q. 8. What different varieties of bicycle are there, and how do they differ?

A. Almost as many varieties as there are makers, — hundreds of them. They differ mostly in the materials used and in the shape and complexity of the parts. For instance, some have wooden wheels and some iron, or steel; some have tubular frame-

work and some have solid; some have iron tires and some have rubber; some have plain bearings and some have ball or roller bearings; some have socket heads and some have spindle heads, and so on. But they are all constructed on the same principle, and of the same generic form.

Q. 9. When was the bicycle first used?

A. In 1863, so far as any authentic accounts are extant.

Q. 10. Where was the first bicycle used?

A. In Paris, France. Its first street use was on the Boulevard St. Martin. Its first country-road use was in Ansonia, Connecticut, by the same rider.

Q. 11. Who was the first to ride a bicycle?

A. Pierre Lallement, a Frenchman, afterwards, and still, a resident of the United States.

Q. 12. When and where was the name *bicycle* given to this machine?

A. In 1867, in Paris. Before that, and for a short time after, it was called *Vélocipède à pedales*, — a pedal-velocipede; and in 1868 it was given a brake on the rear wheel, and in that form called *Vélocipède à pedales à et frein*, — pedal and brake velocipede. In that year, however, the name bicycle mostly superseded all others.

Q. 13. When was the bicycle first brought to America?

A. In 1865, by Lallement.

Q. 14. When was it first taken to England?

A. In 1868, and from Paris. It is in dispute who was the first to take one to that country.

Q. 15. Has the bicycle been in constant use since its first introduction to these countries respectively?

A. In France it has, and to a very large extent, although the Franco-German war checked its progress, and nearly crushed it out for a few years after 1870. In the United States it came slowly into use until 1869, when it assumed almost a craze. The carriage-makers got hold of the making of the "velocipedes" (as they were almost universally called here) and produced so many wooden and cheap machines, and opened so many rinks, that a reaction and failures set in, and the business died down, and bicycling fell with it. From 1870 to 1876 there were very few bicycles used in America, and almost none made. Since that time the art and the business have both steadily advanced together, and the mutual interests of organized bodies of riders, and of large enterprise and investments in manufacture and in mercantile dealing, have promoted a permanent and increasing spread of the use of the bicycle in America. In England its use has been constant and increasing from its first introduction.

Q. 16. Was the bicycle, or "velocipede," of those early years the same kind of machine as the "modern bicycle," or the "wheel" of to-day?

A. In general character or structure, yes; in particulars, no. It has been improved by invention,

by skill in manufacture, by experience in differentiating its points for effective use, and by the general advance in the mechanical arts. It is different now as the gun or the sewing-machine of to-day are different from those of sixteen or eighteen years ago.

Q. 17. What is a tricycle?

A. It is a velocipede having three wheels upon the ground for support, traction, and steering. In the mechanical means for propulsion by the feet and guiding by the hands, and in the arrangement of the wheels, and other particulars of construction, it offers a considerable number of varieties.

Q. 18. When and where was the tricycle first used?

A. A three-wheeled velocipede was used and patented in France in 1826; and velocipedes of this species have been more or less used, and from time to time improved since that time.

Q. 19. What is the origin of the name *tricycle?*

A. The French gave it to this carriage, some years prior to 1848. In that year it appears in the title to a patent for an improvement.

Q. 20. Has the tricycle been long in use in other countries?

A. It has been used in very small numbers both in the United States and in Great Britain prior to the introduction of the bicycle; but it is only since the successful and general use of the latter, that the makers have given tricycles sufficient attention to im-

prove them, and have ventured on the expense of making them with the care and accuracy of bicycles. It may be said also that it is the success of the bicycle, and the results obtained by it, that have made the demand for good tricycles.

Q. 21. How extensive is the use of tricycles now?

A. There are hundreds of them in use in America and thousands in Europe. Tricyclists have their own clubs and associations, besides forming a part of the membership of the other leading velocipede fraternities; and they consist to a very considerable extent of ladies.

Q. 22. What is a quadricycle?

A. A quadricycle is a four-wheeled velocipede, generally having the four wheels on the ground in pairs of nearly equal size, abreast like wagon wheels. The arrangement, however, differs in different varieties. This class has never attained the success of the bicycle or tricycle, and is almost out of vogue, except in two varieties; one of these is an American one, having two large wheels abreast in front, and two small ones abreast back of them; the other is an English "Sociable," or velocipede for two riders, having two large wheels abreast, and two small ones, arranged one before and the other behind the main axle for guiding-wheels.

Q. 23. What is a monocycle?

A. It is a velocipede having but one ground wheel; and in most varieties this wheel is large,

with space for the rider inside; in some varieties the rider sits over or on the wheel. This species is mostly confined to patent-office reports and the hands of a few acrobats. It has never been put to practical use to any extent.

Q. 24. What was the origin of quadricycles and monocycles?

A. They were first made and named in France, like the whole class of velocipedes. The quadricycles have been made in the effort to reduce the wagon to human propulsion, and the monocycle in the effort to reduce the velocipede to one wheel.

Q. 25. What relation have the water-velocipedes to the land-velocipedes referred to?

A. Only this, that in them although one or more hulls or floats take the place of wheels, the operation of them is through mechanism for foot action, connected with paddles or propellers, so that they are propelled by the feet of the rider. One or two of them have been made quite practical. But the circumstances of water travel are not so favorable to this method of locomotion.

Q. 26. What are the characteristics and comparative constructions of the "safety" velocipedes referred to, in a general way?

A. They are mostly called, by the inventors or makers, "bicycles," in order to gain for them the favor accorded to that most successful species; and they are put forth on the taking, but erroneous, idea

that they are safer from accidents. Some of them, by means of levers and treadles, attached to the frame and cranks of a machine nearly resembling the bicycle, otherwise enable the seat to be placed farther back from a perpendicular through the axle of the fore-wheel, so that the liability to be thrown forward by striking an obstruction in the road is reduced; whilst others by similar means enable the rider to take a machine with a smaller fore-wheel, and so ride at a less height from the ground. The two fairly successful varieties, one in each, of these are of English origin and make.

Another, of the same origin, is the "dicycle," as sometimes more properly called, and has its two ground-wheels of equal size and abreast. It looks like a tricycle with the guiding-wheel removed, — the steering being done by releasing one of the wheels, or by brake action, or by both.

Another of this species, though of English origin in its parts and general divergence, is of American make, and has two ground-wheels in the same plane, the smaller one in front; but one is a guiding-wheel and the other a driving-wheel, and the operation is by levers, bands, and clutches.

These are the only four kinds that are now used to any extent.

Q. 27. How does the use of these "Safeties" compare in extent and practicability with the others?

A. In extent, the use of them all is a little less

then one per cent. of that of bicycles and tricycles. In practicability or effectiveness, they are neither of them equal to the bicycle for speed or distance, nor better than the tricycle; while for safety or comfort, they are not equal to the tricycle. As to the matter of safety, compared with bicycles, it is very like that which is sometimes provided by mistakenly careful fathers in giving knives to their boys, — a dull one being thought safer; whereas the dull one, when it does cut, is worse than the sharp one, and when it don't is not so effective.

MECHANICAL.

Q. 28. Why are most bicycles made with metallic wheels, instead of wooden ones?

A. Because they can be made lighter and stronger, and to take less air resistance when in motion.

Q. 29. Why are rubber tires used on them?

A. Because they prevent noise, jarring, and slipping, to a great degree over metallic ones.

Q. 30. Why are not two rear wheels put on behind, instead of one?

A. Because it adds weight and friction, makes a grave mechanical difficulty on curves, and is unnecessary and ineffective for the purpose of stability, for which they have been suggested.

Q. 31. Why isn't the small wheel in front?

A. For several reasons it is better to have it be-

hind: the steering is steadier, the drag of the little wheel is less than the obstruction if it be pushed, and the whole machine is more easily and completely controlled by having the steering and driving wheel combined in one, — which cannot practically be effected with the small wheel in front. Amongst other reasons is this, that the easiest learned and most practical way of mounting is by a low step in rear of the saddle, and this is only obtained by the present construction.

Q. 32. Why don't you have some arrangement so that you can stand still when you stop.

A. First because you don't need it; and, second, because you can't. Many contrivances for that have been tried, and all have failed to be of service, because you can get off when you stop, and on when you start, easier than you can carry around any sufficient bracing device.

Q. 33. Why aren't bicycles made so they will never break?

A. They are calculated and made (good ones are) so that they will not break under any ordinary or reasonable use, or any common incidental strain. There is no reasonable implement in the world that cannot be broken under ingenious, stupid, or forcible misuse, or by extraordinary calamity. To provide against these would require so much additional weight and other modification in structure as to impair very seriously the effectiveness

of the instrument for its proper uses. This insurance would be too expensive.

Another thing: pedal-pins and handle-bars, etc., are subject to a large amount of jarring, which in time makes any metal susceptible of easy breakage,—just as in the well-known instance of railway car axles.

These remarks also apply to tricycles.

Q. 34. What is the advantage of ball-bearings?

A. About the same, in a general way, as a fine edge on a knife. Mathematically, the advantage of ball-bearings to the front wheel of a bicycle over plain bearings is $\frac{3}{10}$ of one per cent. of the whole resistance, or of the labor of riding. This is supposing a good ball-bearing and correct adjustment. Similar advantage is obtained by ball-bearings on the pedals, and a little less by having them on the rear wheel.

Q. 35. Why are not "double" ball-bearings used on the Columbia machines?

A. Because there is no especial advantage in "double" ball-bearings *per se*, any more than in triple or single ones; and because the bearings made for these machines are mechanically correct for reducing both journal and pivot fiction, and for adjustment, steadiness, and strength. One advantage of these bearings is in their great adjustability, taking up to a nicety all end shake and lost motion in the wheels.

Q. 36. What is the difference in practical value between a Standard and an Expert Columbia?

A. The Expert has more rigid forks, ball-bearings, is a little better "style," and a little more expensively finished. Its extra cost requires the difference in price, and the value is there for the rider.

Q. 37. Why are "dropped" handle-bars put on some bicycles?

A. Because some riders desire them. If a man has long arms and a short body they are better for him.

Q. 38. Why are not all machines made with "dropped" bars?

A. Because some riders do not want them; and because for many riders the straight ones are better. The object of *bent* handle-bars is to place the handles at a point where the individual rider's arms will be brought to the right position.

Q. 39. Have bicycles and tricycles any commercial value after they have been ridden awhile?

A. Yes; the great demand for them makes them good property, and second-hand machines usually bring but a few dollars less than the original price.

Q. 40. Why do bicycles cost so much?

A. Because they are made of costly materials and by expensive skilled labor; because the peculiarities of their structure require expensive machinery for constructing them with truth and accuracy; and because it costs money to do business. The finest

things cost most. You can buy a watch for $2.50 or for $250 or more, and the percentage of profit is more on the lower-priced ones. You can buy a bicycle for $45 or for $145; and the percentage of profit is less on the higher-priced ones to the maker and dealer, while the purchaser gets more than his ratio of money's worth in the difference.

Q. 41. Why do tricycles cost so much, and so much more than bicycles?

A. See last answer for the first part; the difference is in the cost of construction, — more material, more labor, more machinery, etc. You can't get anything valuable in this world without paying for it.

Q. 42. Why do machines cost more here than similar ones do in England?

A. They *don't* cost so much more as is made to appear; because the real standard of values is different in the two countries. There is a popular fallacy about that. But what real difference there is, is due to the tariff, which makes an addition of duties to the machine made abroad and brought here, and an addition of price, on account of duties, of materials and labor and plant on machines made here.

Q. 43. What difference is there between the Columbia tricycle and others in the market?

A. Taking it throughout it is made of more expensive material, and is more stanch and durable for it; it has *adjustable* ball-bearings at *all* working points in the propulsion; and it is on the inter-

changeable plan, and is warranted. It has also other differences, learned by comparison or from the maker's catalogue.

PRACTICAL.

Q. 44. Is it difficult to learn to ride a bicycle?

A. It is rather difficult to a novice to learn it alone. In a riding-school, or under a good instructor, it takes from twenty minutes to six half-hour lessons to acquire the necessary rudiments. After that, one can learn something by experience until he becomes an expert. Those who have ridden the old "velocipede" can ride the bicycle at once without aid.

Q. 45. Is the bicycle a safe machine to ride?

A. Yes, the safest vehicle used. There is no appliance of our modern civilization that is not more or less dangerous, or liable to cause accidents, by abuse, or by careless and indiscreet use.

Q. 46. Is it more dangerous than the so-called "safety" machines?

A. Not a whit. By as careful use, by proper adjustments, and by equal skill in using, it is just as safe; and want of care or skill is no more productive of accident with it than with most of the others. You don't need to use a dull knife because a sharp one cuts.

Q. 47. You can't go over a curb or even a pebble with a bicycle, can you?

A. Yes, you can go over any reasonable obstruction, when necessary; and you "take" an obstruction that is large, just as a horseman takes a fence.

Q. 48. Isn't the brake likely to throw you over?

A. Not if you use it properly. You can't come to a dead stop while running swiftly without being thrown forward. The brake should be used only in descending hills, as a restrainer, and should be applied gradually.

Q. 49. How fast can you go with it?

A. As fast as you would drive a horse, and a little faster. It has been ridden twenty miles an hour under the best conditions. Average road-riding gives a strolling gait of eight miles an hour, a lively gait of ten to twelve miles, and a fast pace of fifteen miles. Twenty miles an hour have been done on the racing-track.

Q. 50. How far can you ride in a day?

A. If you are riding several days in succession on a tour, plan for thirty to forty miles a day. You can ride fifty to eighty miles without weariness on good roads; and by the tables on another page you will see that one hundred miles or more is a frequent day's ride, and even two hundred miles and more have been accomplished.

Q. 51. How does bicycling compare with walking, or horseback riding?

A. It is less wearisome and more exhilarating

than either for the same length of time; and with the same amount of exertion you can go three times as fast or as far as in walking, and about once and a half as fast as on horseback; while for a day's accomplishment to the same extent of weariness you can bicycle four or five times as far as you can walk, and twice as far as you can ride on horseback, with the same amount of previous practice.

Q. 52. How much exertion does it take to ride the bicycle?

A. For part answer see the preceding. On down-grades comparatively none; on level ground and good fair roads about one third that of a brisk walk, or less, according to pace; on up-grades or very rough roads, it is like walking up-hill, — more exertion according to grade and length.

Q. 53. Is it tiresome to ride much?

A. It is a little tiresome the first few times, as it is to do anything else in muscular exercise. After that it is not more than explained in preceding answers. It is just tiresome enough to induce good appetite and sound sleep.

Q. 54. Isn't one strained up all the time to keep his balance?

A. Not at all; one has to keep an eye on the road in a general way, just as an engineer of a train, or a driver of a horse does; but he has freedom of eyes and one or both hands for anything else. The steadiness of riding gives the impression of effort at

balancing. Is a sailor "strained up" when he walks the deck in an ordinary sea? The balancing and steering of the bicycle become, with practice, involuntary, and expert riders wheel in company for miles with no more interruption in their conversation than if they were walking.

Q. 55. How steep a hill can you ride?

A. In a general way any hill that you can drive up with a horse and buggy, and two on the seat. If you are driving a long distance you get off and walk up a steep hill to save the horse, if you are a good driver, — to save your strength, if you are a good rider. Take the country through, there is one hill in a hundred which for its steepness, or length, or looseness of surface, one will not ride, except he be expert or on a short run.

Q. 56. Can you ride through sand?

A. Yes, if it isn't deep, or if it has been wet down hard; but a sandy road is to be avoided, when possible. Mud, ruts, snow, stones, gulleys, up-hill, head wind, — anything else is better than two to five inches of loose sand, with no strip of turf or beaten walk to exchange it for.

Q. 57. Don't you have to give up riding in hot weather?

A. Not at all; then you like to ride more. Riding is cool for the breeze it gives, and it takes you to cool places; you avoid the direct midday sun, and find it delightful morning and night.

Q. 58. Can you use it any during the winter?

A. A considerable number of riders in the Northern States use it *every day* during the winter. Even in the inclement State of New Hampshire a bicycler rode through the streets and on the roads during a part of each of the 365 days of 1881. But the average rider will not use it when there is much snow on the ground, or when the roads are rutted and frozen, except for short distances.

Q. 59. How often do you have to oil the bearings?

A. Plain bearings about once in fifty miles, and ball-bearings about once in two hundred miles, if they are well made ones, and the machine is in constant use. When allowed to stand a great deal without use, the oil runs out and gums up. A machine should be oiled on starting out, if it has previously been standing some days. The principle is, the bearing surfaces should have a little oil between them all the time.

Q. 60. Is it necessary to carry a bell?

A. Not necessary, except in certain cities which require it, but convenient and useful everywhere.

Q. 61. What does it cost for repairs?

A. A trifle, — an average of a dollar or less a year. One spends a little money every year, however, incidentally, on added accessories and comforts.

Q. 62. Do the tires stay on?

A. They do on Columbia machines, and on nearly all first-class ones.

Q. 63. How long do the tires wear?

A. We have seen them where they have been in use for four years over 8,000 miles of roads, and were not much worn.

Q. 64. What does a set of new tires cost?

A. About $10, for a fifty-inch bicycle.

Q. 65. Are bicycles used for business, or practical carriage?

A. They are so used to an increasing extent by students, going to and from schools and colleges; by physicians on their professional rounds; by clergymen making pastoral calls and exchanges; by business men and clerks and mechanics, going between their homes and their places of business; by collectors, mail-carriers, and telegraph boys, and messengers and agents, and by many others. They are used by mounted orderlies in the Italian army.

Q. 66. How does the tricycle compare with the bicycle for speed and ease of riding?

A. It has about one-fifth disadvantage as to speed, with the same exertion, or else as to exertion, with the same speed. It is heavier, has more frictional parts, another track on the road, and takes rather more air resistance; hence it must always be at some disadvantage, as to speed, as compared with the bicycle.

Q. 67. What are the compensating advantages of the tricycle?

A. It is a steadier machine for the timid, the old, or the disabled, and is adapted for ladies' use as well as for gentlemen's. It is the best form of "safety" machine. It admits also of easier stopping and starting where this is necessarily frequent, as in a crowded city, or for carriers, etc. It is also adapted for carrying more luggage; and some bicyclers have it also as an additional machine for its greater comfort in night-riding and for winter use.

Q. 68. What kind of roads can the tricycle be used on?

A. Any that the bicycle can be, or that you could drive pleasurably over with horse and buggy.

Q. 69. Can it be ridden up-hill?

A. It can, and is ridden by many up any hill likely to be met on excursions, or tours.

Q. 70. Is the tricycle made as strong and as carefully and finely as the bicycle?

A. It is now; the Columbia tricycle is built in the highest style of the art, with every valuable appliance for adjustment, and with the finest attention to details.

Q. 71. Will a tricycle fit a whole family?

A. It is easily adjustable to suit equally well the use of adults of either sex, or of youth or maidens, of a height of four and a half feet or more. This is

effected by simply changing the position of saddle and handles.

Q. 72. Is the use of the bicycle or tricycle healthful?

A. It is healthful in every aspect, and in any reasonable use there is no element of injury. — See "Words of the Wise," on other pages.

Q. 73. Is it not difficult for a busy man to find time to ride?

A. Some of the busiest men in this country ride from 1,000 to 3,500 miles each year. The bicycle is so ready to mount that odd minutes of the day can be made use of, and for short rides no change from the ordinary business dress is necessary. The climbing of a steep hill will exercise more muscles and organs in a beneficial way, and more quickly, than any form of gymnastic exercise.

Q. 74. How long will this bicycle and tricycle use and interest be kept up? Won't it go out by and by as a fashion or craze?

A. To the latter, no; to the former, always. It is a permanent institution, so far as any human implement and industry can be said to be so. So long as there are men and women and roads; so long as vehicles are necessary and convenient; so long as bodily exercise profiteth; so long as wholesome recreation has any charm, bicycling and tricycling will hold their place, and continue to advance toward the foremost favor. They have continued too many

years and taken too strong a hold in all civilized and enlightened countries of the world, for any considerable recession or arrest in their course.

Facts and Accomplishments.

The ability merely to ride a bicycle, and to manage it decently, safely, and pleasurably, is easily acquired, and is an accomplishment no gentleman should be without.

Even on the most disinterested grounds it will be admitted that every gentleman should be able to drive and to ride a horse, to handle the simple mechanical tools, to swim, to row a boat, and to ride a bicycle.

The art once learned is never lost; and the opportunities of learning are now almost universal in the cities, and are to be found by applying at agencies throughout the country.

For further explanation of the why you should learn to ride, read the brief extracts under "Words of the Wise," on another page.

Karl Kron, a well-known journalist and amateur bicycler, rode a "right away" distance of 1,422 miles, from Detroit, Mich., to Staunton, Va., in the fall of 1883, at the average rate of 42 miles a day, on a Columbia bicycle. His distance on one of those days was over 100 miles.

One hundred miles on bicycle within twelve hours, including stops and rests, have been a frequent performance, and have once been done inside of ten hours.

One hundred and nineteen miles, each within ten hours' riding time, were covered by some riders of Columbia bicycles in 1883; and so were 120 miles by several in 1882.

Two hundred and thirty-six miles on a bicycle without a dismount have been done on an English track; and 1,404 miles in six days, of eighteen hours' riding time each, by one rider.

Mr. W. F. Sutton, in Oct., 1883, rode 260¼ miles on a bicycle, over English roads, within the twenty-four hours.

One English tricycler's record of road riding on a tricycle amounted to 6,053 miles during 1883.

In six years and a half the number of bicyclers in the United States has increased from 3 to 30,000.

In about that time the number of bicycle clubs has increased from 1 to about 400.

There is now no State or city, and hardly a town or village, where the sight of a bicycle is not a familiar one.

Prejudice has subsided, opposition been quelled, restrictions removed, almost everywhere.

It has been proved a vehicle for men, an instrument of dignity and genuine value, and not a mere plaything of boys.

As such it has been perfected to a remarkable degree in its construction and manufacture, and its capabilities developed, and its patronage fallen largely to the best and most enterprising and honorable in the different communities.

Its interests are promoted by a national organization (The League of American Wheelmen), of about 4,000 members, with branches in most of the States.

Devoted to it are a high-class literary and artistic magazine (OUTING and THE WHEELMAN), two weekly papers of considerable importance, and several smaller ones. Books have been written about it, and our current literature is permeated with it.

The medical profession actively favors bicycling for its healthfulness, and the clergy for its utility and moral influences.

The young find it full of wholesome fascination, and the older find in it needed recreation, and a renewal of youth.

What has been done and recounted is the success of the genuine bicycle, which has had some imitations and substitutes as a natural consequence, but which still stands supreme among velocipedes.

There were seventy successful participants in all-day runs of 100 miles and upwards, on bicycles and tricycles, in 1883, on American roads.

The total distance covered by the seventy was 7,773.47 miles, — an average of 111.5 miles.

Fifty-six per cent. of the machines were Columbias. Over 55 per cent. of the distance was covered by the riders of Columbias.

Of those who rode more than the average distance 60 per cent. were on Columbias.

The two longest distances, each $200\frac{1}{16}$ miles, were done on Columbias.

Of those riding more than 110 miles in the day, the riders of Columbias made the fastest rates of speed (highest 10.27 miles an hour), and the shortest riding times.

The trotting and other of the following records were made, of course, with flying start, while the bicycling records are from a still or standing start.

The best bicycling record for a mile from a flying start is that of $2.31\frac{2}{5}$, made at the end of a twenty-mile race, and which compares still more favorably with the horse records.

It is noticeable from the table and from experience, that, for distances over ten miles, the rider of the bicycle has much the advantage over the rider or driver of a horse as to speed, distance, and endurance, not only on the track, but also on the road; and the greater the distance chosen or the longer the time the more advantage is found.

Some Comparative Best Records.

Miles.	Walking.	Running.	Rowing	Skating.	Trotting.	Tricycling.	Bicycling.
	h. m. s.	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*
1	6 33 2/5	4 16 1/5	8 36 1/2	3 00	2 09 3/4	3 11	2 41 3/5
2	13 49 3/5	9 11 1/2	13 21 1/2	. . .	4 46	6 28	5 36 3/5
3	21 11 1/2	14 36	. . .	. . .	7 21 1/4	9 49	8 41 1/5
5	36 08	24 40	. . .	. . .	13 00	16 24 1/2	14 39 2/5
10	1 17 40 3/4	51 26	1 23 00	43 53 1/4	27 23 1/4	33 45	29 22
20	2 50 05	1 54 00	. . .	1 31 40	58 25	1 15 24	58 34
50	8 10 54	6 19 00	8 55 20	4 13 56	3 55 40 1/2	3 18 27	2 43 58 3/5
100	18 53 40	13 26 30	. . .	11 37 45	8 55 53	7 23 50 2/5	5 50 05 2/5

Legal Lifts.

On the 29th May, 1877, Alfred D. Chandler, Esq., took his first bicycle, an imported one, from the custom-house in Boston. He paid, under protest, forty-five per cent. duty on it, as for steel, claiming that it was a "carriage," and should be subject to only thirty-five per cent. duty, as in that class. He appealed to the Secretary of the Treasury, sending two elaborate briefs, and was successful. Secretary Sherman, under advice from the law department at Washington, decided that the bicycle was a carriage, and carriage it has been at the custom-houses ever since. That was the first legal contest, since the revival, in America.

On the 22d April, 1878, an order was passed in the Boston Board of Aldermen, "That the Committee on Police consider and report if any measures are necessary to regulate the passage of bicycles through the streets of our city." By the effort, principally, of another lawyer, who was a wheelman, and member of the City Council, this order was referred directly to the Police Commissioners, without other action; and the whole movement resulted in an order promulgated in the police department:— "In regulating the use of bicycles, you will be guided by the same laws as apply to ordinary vehicles, and see that they conform therewith, both

as to speed and location." That has proved sufficient for Boston ever since, and had much influence elsewhere.

In July, 1879, ten gentlemen were taken into custody, in Brockton, Mass., after an attempt to extort money, on a complaint of violating the Sunday-laws, by riding their bicycles. They were fined ten dollars each by the trial justice; but, on appeal to the Superior Court, at Plymouth, in November, before Mr. Justice Wilkinson, presiding, were acquitted.

In the meantime the leading English case of Taylor *vs.* Goodwin, in the Court of Queen's Bench, had been decided, and reported in Law Journal Reports, part 6, June, 1879, vol. 48, N. S.; in which it was judicially established that a bicycle is a carriage, and the rider of it a driver of a carriage, in respect to all legal rights and duties relating to the highways.

In the fall of 1879 another case arose (and in Massachusetts again), that of McFarland *vs.* Brown. The plaintiff brought a suit for damages against a Worcester wheelman, for spilled milk and other injuries received through the fright of a horse, by reason, as was alleged, of the presence of the defendant on a bicycle in the highway. The trial occurred on 8th November, before Associate Justice Taft, of the Second District Court of Southern Worcester, and was a well-contested one. The court held that it seemed clear that "bicycles cannot be

deemed as nuisances, but are entitled to the reasonable use of the highway; that there were two questions involved in the case: first, whether the plaintiff was using due care; and, second, whether the defendant was negligent"; and rendered judgment for the defendant. There was no appeal taken.

The next contest arose in the City of Brooklyn. There a section of an ordinance, which had been a dead letter for some ten years, was, in 1879, revived, to the annoyance, to some extent, of bicyclers in the streets. In April, 1880, a petition was presented in the Board of Aldermen praying that the freedom of the streets be granted to wheelmen, subject only to the regulations applying to other carriages. A second petition was also presented. The matter was referred to the law committee, who gave a public hearing on the matter; gave it thorough consideration; took advice of corporation counsel, and made a full and interesting report. "As a matter of legal right, your committee believe that bicyclers are entitled to the use of the streets the same as other vehicles, no more or less subject to the same rules, liable to the same responsibilities, and for violation of the laws relating to vehicles to be visited with the same penalties," they reported. "In all courts where the question has arisen, it has been, without exception, decided that the bicycle is a vehicle, and, as such, has equal right with other vehicles to the

use of the streets, without discriminating restrictions; and that no authority exists by which the peculiar form of a vehicle or its motive-power can be arbitrarily determined, to the exclusion of some other particular class. Your committee believe this to be good law and common-sense." And, further, "that the Common Council, in restricting the use of bicycles, exceeded its jurisdiction, and not only did an act of unjust discrimination, but interfered with actual existing legal rights." The ordinance was repealed, and the only regulation additional to those relating to other vehicles was the requirement of lamps between sunset and sunrise.

What was known as "the Haddonfield Turnpike case" also arose in 1880. The Haddonfield Turnpike Company, a New Jersey corporation, instructed its keepers to exclude bicycles, and one bicycler was actually ejected, and several others had the gates closed on them. There was a good beginning made for a suit, and counsel were retained, and investigations made on both sides. The Turnpike company found its ground untenable, and was persuaded, without a suit, to withdraw the obnoxious orders, and leave its roads as free to bicycles as to other carriages,—and a little more so,—without tolls. The expenses of this last matter, to the extent of $50, were borne by the League of American Wheelman, whose officers also aided in the preceding Brooklyn matter, as they have in many others.

On the 15th January, 1881, quite a number of New York wheelmen held a meeting, to devise and consider some method of procedure to open Central Park to bicycles; a committee was appointed, who presented, on the 16th February, a petition to the park commissioners. A counter petition was also presented. Both petitions were tabled at once. In April another petition, signed by the officers of the local clubs, asking more limited privileges, and also a petition signed by the officers of the League of American Wheelmen, supported by statements of various mayors and magistrates, and other prominent men in cities and towns, where the bicycle had had free or slightly conditional course, were presented. The commission was still divided, and it seemed impossible to make any change. Meantime the president of the League interested Col. A. A. Pope in the matter, who immediately obtained a careful and exhaustive legal opinion upon questions involved in the validity of the order of the commissioners of Central Park, passed July 7, 1880, "That no bicycles or tricycles be allowed in the Central or city parks." On the strength of that opinion, he offered to pay all the expenses of any New York wheelman who would make a test case under that order.

On the 1st July, W. M. Wright, S. Conant Foster, and H. H. Walker, of that city, rode into Central Park, two of them on a "sociable" tricycle,

and one on a bicycle, were arrested, taken before the police court and fined, refused to pay, and were taken to the Tombs; thence they were taken before Judge Lawrence of the Supreme Court, on a petition for writ of *habeas corpus*. The course of proceedings under this petition was unique in some respects, and was continued in the courts until the expense on the part of the petitioners amounted to more than $7,000, and more than two years had elapsed. In the meantime the L.A.W. meet was held in New York City, in the summer of 1883, and that, combined with other causes, including a change in the membership of the Park Commission, brought about the opening of Central Park and the Riverside drive to wheelmen, under certain reasonable regulations; and all interest in that *cause célèbre* abated.

At the April, 1881, term of the Supreme Court of New Hampshire, sitting at Exeter, for Rockingham County, was brought to trial, before Mr. Justice Clark and a jury, the case of Ladd *vs*. Allen, *et al*. The plaintiff was a lady, who had been sitting in a buggy, by the side of a road, talking with a friend, when the defendants, riding bicycles, approached in the road; the plaintiff's horse took some alarm, turned about in the road, throwing the lady out, and ran. The suit was for damages against the wheelmen. The court charged the jury

that the defendants had the right to a reasonable use of the public highway, with any sort of a carriage, and submitted the usual questions as to whether, and by whom, there was negligence, etc., and the jury found for the defendants, and the court entered judgment accordingly. This is the nearest to a "Supreme Court decision," as to the rights of bicyclers in the highways, obtained in America.

On the 2d of July, 1883, T. D. Chapman was arraigned on a charge of assault upon Frank R. Lane, a wheelman, in Washington, D.C., by forcing his horse upon the latter so as to cause a violent fall and injury. Judge Snell found the prisoner guilty upon the evidence and a full hearing, imposed a fine of ten dollars and costs, and accompanied his decision with some wholesome remarks, that "in consideration of the fact that Mr. Lane had sustained only slight injuries, and that the damage to the bicycle could not be considered in a case of assault, a nominal fine of ten dollars was imposed. The amount of damages for injury to the bicycle is a matter for after-consideration by a civil suit. In the eyes of the law a bicycle is a carriage, having, in common with other carriages, equal rights to the streets and highways, protected by the same laws, and their riders amenable to the same road-laws governing the drivers of other vehicles. When a man driving a team turns out of his course to obstruct the course of a bicycle,

he does so at his peril." Subsequently, in the same month, John Jackson, a colored man, was brought before the same court on a similar charge, for riding his bicycle over an elderly gentleman. Judge Snell, meting out impartial justice, and finding the prisoner guilty of an assault, imposed a fine of twenty dollars.

What to Select.

So far have the manufacture of velocipedes and the trade in them been developed in America that every one, from the little boy or girl to the aged or disabled adult, can be fitted with a machine.

Nearly every purse can be accommodated with prices and terms; as the prices for bicycles vary from $7 to $175, and of tricycles from $20 to $240.

There are in the United States eight manufacturers and several small makers, eight importers, and about four hundred dealers and agencies; and in almost every town of considerable size there is a place to examine, to buy, and to get information.

Of the large manufacturers, one makes only first-class bicycles and tricycles; one, first-class tricycles; one, first-class quadricycles, and a cheaper one, youth's and a cheaper line of men's bicycles; one, a cheaper line of youth's bicycles and velocipedes; one, boys' and a cheaper line of youth's bicycles and tricycles and velocipedes; one, a line of men's

"Safety" machines; and one, a cheap line of children's velocipedes and bicycles.

The importers deal in bicycles and tricycles of different foreign makes, mostly for adult use, and also in some special velocipedes.

So that there are about three hundred different variations of size, style, construction, and finish, offering something to suit boy, man, or woman, curiosity hunter, or sound mechanic, racing student, touring vacationist, or business traveller.

It may be for the convenience of some who wish to learn the art of bicycling to find here the addresses of dealers who have RIDING SCHOOLS, where one may learn more quickly and easily. The principal ones having permanent schools are these: —

Albany, N.Y., W. G. Paddock, 54 State st.
Baltimore, S. T. Clarke & Co., 22 Hanover st.
Beverley, Mass., J. G. Wood, Jr.
Boston, The Pope M'f'g Co., 597 Washington st.
Chicago, Ill., John Wilkinson Co., 68 Wabash ave.
Cincinnati, O., B. Kittredge & Co., 166 Main st.
Cleveland, O., Davis & Hunt, 147 Ontario st.
Dayton, O., Gump Brothers, 34 N. Main st.
Hartford, Conn., Weed Sewing Machine Co.
Milwaukee, Wis., Meinecke & Co.
Newark, N.J., Zaccharias & Smith, Broad st.
New Haven, American Bicycle Co., 79 Orange st.
New York, N.Y., The Pope M'f'g Co., 12 Warren st.
Philadelphia, H. B. Hart, 811 Arch st.

St. Louis, Mo., Missouri Wheel Co., 12th st.

Troy, N.Y., F. B. Edmunds, 279 River st.

Washington, Wm. C. Scribner, 1108 E st., N.W.

Besides these, nearly all other dealers have some way and place of teaching the rudiments of riding the bicycle without accident or difficulty, and there is hardly a city or town where such assistance may not be had.

Publications.

For suggestions as to selecting a machine, for further explanation of its use, facts relating to the art of wheelmanship, as well as its delights and picturesque opportunities, reference may be had to the following books and publications: —

1. "The A. B. C. of Bicycling." By H. B. Hart. 36 pp. Illustrated. Paper. Price, 10 cents.

2. "Suggestions for Choice, Care, and Repair of Bicycles and Tricycles." By an old Wheelman. New edition. 36 pp. Price, 10 cents.

3. "The American Bicycler." By Charles E. Pratt. 266 pp. Illustrated, 1880. Price, 60 cents.

4. "Ten Thousand Miles on a Bicycle." By Karl Kron. 300 pp. (in press). Price, $1.50.

5, 6. "The Wheelman." Volumes I. and II. 480 pp. each. Finely illustrated. Price, $1.50 a volume.

7. "Outing and The Wheelman." Volume III. Finely Illustrated. Price, $1.50.

Numbers 1, 2, 3, and 4 (the latter as soon as issued) can be obtained of most of the dealers in bicycling literature or sundries, or of The Pope Manufacturing Company, 597 Washington street, Boston, Mass., whose revised 36 pp. Illustrated Catalogue for 1884 is also valuable as a sound little treatise on velocipede construction.

No. 1 contains very practical elementary instructions for learning to ride, and some other instructive matter.

No. 2 contains practical information about selecting a machine, and the care and handling of it.

No. 3 is still the standard work on bicycling, though somewhat out of date, and contains historical and mechanical matters of interest, besides very useful suggestions as to rules of the road, training and condition, formation of clubs, roads and routes, music of bugle calls, and much other valuable matter.

No. 4 is, besides the personal notes and log-book of ten thousand miles of American travel on a bicycle by the author, a collection of routes, with descriptive information and distances, and of other valuable information.

Nos. 5, 6, and 7 are bound volumes of a high-class monthly magazine, illustrated by the best artists with the best illustrations, pictorial and liter-

ary, of bicycling and tricycling, anywhere to be found. They contain also descriptions of American and foreign travel, practical articles, mechanical papers, poetry and humor, as well as an epitome of the principal occurrences during the periods from September, 1882, to February, 1884. They are most entertaining as well as instructive volumes, and are obtainable direct from the publishers, THE WHEELMAN CO., 175 Tremont street, Boston, Mass.

"Outing and The Wheelman" is an elegant illustrated eighty-page monthly magazine, published at $2 a year in advance, by THE WHEELMAN CO., 175 Tremont street, Boston, Mass. It is devoted to the out-door positive amateur recreations, including bicycling, tricycling, canoeing, yachting, tennis, etc., giving the leading place to bicycling, as its rank entitles it to hold.

Besides the above, there are "The Bicycling World," "The Wheel," "The Western Cyclist," "The Cycle," and several other wheel papers; Chandler's "Bicycle Tour," etc., and several other books of American publication, the addresses of which will be found in the publications given above.

In England, France, Germany, Italy, Belgium, Australia, and elsewhere, are published bicycling books and papers, lists of which there is not room for here.

The L.A.W.

The League of American Wheelmen is an association of riders of bicycles, tricycles, and other velocipedes, in the United States and the Canadas (including ladies also), organized 31st May, 1880, and having for its objects "to promote the general interests of bicycling; to ascertain, defend, and protect the rights of wheelmen; and to encourage and facilitate touring."

At the time of this writing it has a membership of about 4,000, representing nearly every section of North America. Its president is Dr. N. M. Beckwith, of New York City; its corresponding secretary is Mr. W. V. Gilman, Nashua, New Hampshire, to whom all inquiries may be addressed; its membership is open to all amateur wheelmen in good standing; and the admission fee is one dollar.

Although the League includes little more than one in nine of the actual wheelmen, it is by far the most influential as well as the largest organization on this side the Atlantic, and accomplishes many good results every year. "The Wheel," published at 22 New Church street, New York, N.Y., is the present "official organ" of that body, and may be consulted for further information.

Dress and Conveniences.

The dress of wheelmen has long ago ceased to be chosen generally for show; and their costumes no longer attract so much attention or repel the would-be wheelman.

The beginner will ride in any usual suit, but the sense of comfort and appropriateness, and the desire to economize, which prevails with reference to equestrianism, cricket, yachting, or any other recreative exercise, will suggest a riding-suit.

The dress usually chosen by those experienced and considerate consists of nearly uniform color throughout, of the quieter, darker shades of woollen materials, and of a short coat or jacket, knee-breeches, long stockings, woollen shirt with detachable collar and cuffs (of celluloid for warm weather), a cap or helmet of same material as suit, and comfortable low shoes.

The favorite ladies' costume for tricycling is, in England, of flannel or merino combination, with an overskirt, made as simply as possible, of ordinary walking length (style and bodice left to taste of wearer), loose trowsers to match the dress in color, black woollen stockings, Norfolk jackets (for slight figures, at least), straw hat, with a club ribbon, and a free and substantial walking-boot.

There are several convenient things, called "accessories," for wheelmen to carry or to use in connection with bicycles and tricycles, which are to be obtained from most dealers. Such are: A stand for the bicycle when not in use; a cyclometer, for measuring distances; a lantern, for night-riding; and a bell, for signalling. These are in various forms. One might add a luggage-carrier, for small parcels, and a bag for use when off for several days.

Much interest may be found in taking certain other conveniences not so commonly thought of, such as a pocket compass, a folding rule, a tape-measure, a memorandum book and pencil, and a map, with roads indicated. These are sufficient (though they may easily be added to) for use in exploring, in finding one's way, in taking the topography of the country, the height and grade of hills, direction of roads, distances of places and objects, etc., etc. The wheelman is the land-mariner, so to speak; and he may well be a geographer, a geologist, a naturalist, a chartographer, etc., and add much to his pleasure thereby.

One can carry on bicycle within a weight of from five to ten pounds, a small camera and attachments, and sufficient articles for a week's absence. On tricycle one can carry any amateur photographic outfit, convenient changes of dress and other articles; or anything up to fifty pounds' weight, and not be materially impeded on a tour in either case.

Extracts.

Extract from a speech of the Right Hon. Robert Lowe, M.P.:—

"I have been from the first a very strong advocate for the bicycle (Cheers); in fact, I may claim to have been an antebicyclist (Laughter), for I hardly know whether any of you remember or perhaps know that in the reign of George the Fourth there was an attempt made to have something like a bicycle. It was called a 'dandy-horse.' . . . I had the honor, in the reign of that monarch, of riding one of those machines; so I may call myself an antebicyclist, or an anticipator of the bicycle (Cheers). I remember riding a mile race with the mail on one of those machines, and I contrived to get in before it, to my infinite delight (Laughter and cheers). Therefore, having had this experience in old times, I hailed the introduction of the bicycle with great pleasure, not only because I thought it would be an amusement, but more than that, because I thought I saw in it a great many advantages (Hear! hear!). I thought it was a fine employment and exercise for young men, and would keep them out of a great deal of mischief, and I thought it better for them to spend their mornings and evenings in this exercise than in many of the ways that might be mentioned (Cheers). I thought it would do a great deal of good, and I am

satisfied that if persons who are not young would addict themselves to the use of the bicycle, they would find it a very good thing, and the best possible antidote against the gout (Laughter and cheers)."

"How did Colonel Pope happen to go into the bicycle business as he did?"

This is a question so often asked that the following extract from an "interview" with that leader in the bicycle movement, published in 1880, is of interest: —

"In the summer of 1877 an English gentleman was a guest at my house, spending several months with me; and he was so enthusiastic over the bicycle that in order to show me what it was, and its practicability, he had one made. On that I learned to ride, and, having learned, I began to think, as he did, that the bicycle was worthy of the attention of the American public.

"He went home in September, and I told him to send me over a few bicycles; . . . but he delayed sending them, and later in the season we ordered eight bicycles through our English correspondent in Manchester. They arrived here about the first of January. After we had received and examined them I made up my mind that there would be enough in the business to warrant a proper outlay of capital, and decided to go in.

"Believing that if there was much to do in bicy-

cling we should have to manufacture in this country, I early in that year [1878] interested the Weed Sewing Machine Company in the manufacture. After getting them started on the way, I went over to Europe to study up the manufacture, and to see what hold it had upon the English people, and also to determine whether we should be justified in making the large outlay that would be necessary in order to make it a successful business. I returned in the summer well satisfied, and fully convinced in my own mind that in process of time the bicycle interest in this country would equal that of England."

The short of it is, that he had the sagacity to discern a business opportunity in advance, to assume large risks, to work persistently and wait patiently for results.

Words of the Wise.

"But the bicycle and tricycle are not only enjoyable modes of locomotion, they are also without a peer in their hygienic capacity."—*Dr. S. M. Woodburn.*

"I am of the opinion that no exercise for women has ever been discovered that is to them so really useful."—*B. W. Richardson, M.D., F.R.S.*

"If there ever was a manly exercise, a manly enjoyment, it is that which you represent as riders on the steel horse."—*Gen. E. L. Viele.*

"I want to lift my voice in favor of the 'wheel' as a thing of beauty, as an instrument of pleasure, and as one of the most practical of modern inventions, looking towards practical ends." — *Rev. George F. Pentecost.*

"For men of sedentary life a bicycle is the best of medicine. . . . If bicycles were more generally used by American preachers, there would be fewer hollow cheeks, round shoulders, sensitive stomachs, and torpid livers." — *Rev. John L. Scudder.*

"This manly pastime, which now ranks as the prince of all health-giving sports." — *F. J. Drake, C.E., U.S.A.*

"A year's subsequent use of the new vehicle [bicycle] has confirmed my first impressions as to its practical value for preacher and pastor. It is no longer a whimsicality, but has become an established and sober factor in the round of professional work." — *Rev. Marcus D. Buell.*

"I use the machine [bicycle] daily in visiting patients, and find it not only practical in this direction, but also a money-saving arrangement." — *J. Edward Smith, M.D.*

"With a good bicycle, well ridden, any man, old or young, may enjoy the finest and most exhilarating exercise the world has yet seen, and be as safe as the occupant of a carriage, and safer than the horseman." — *Henry W. Williams, Esq.*

"What the industrial school compels to, the bicycle allures to. For the old-fashioned remedy of 'Send the unruly lad to sea,' let us substitute, 'No! buy him a bicycle.'" — *A. Wynter Blyth, M.R.C.S.*

"*Don't* argue the thing, for a foregone conclusion admits of no argument; and that the bicycle is a practical, useful, safe, and healthful invention has been settled beyond controversy." — *Charles R. Dodge.*

"The more evenly effort is distributed over the entire body, — muscle, nerve, brain, and blood, — the better the results attained. The advocates of the bicycle claim, and my experience leads me to confirm the statement, that this is supplied by its use better than by any other means." — *Rev. S. L. Gracey.*

"Finally, I would say that it [the bicycle] is better than any system of gymnastics in its simplicity and efficiency in affording health and happiness." — *S. M. Woodburn, M.D.*

"The comfort and pleasure which well-fitted glasses give to ametropic eyes cannot be told in words. No more can be revealed, to one who has not tried, the value of a machine which multiplies his locomotive powers by three, and transfers a due proportion of the work he does from his lower to his upper limbs." — *Charles A. Kinch, M.D.*

"Bicycling is a sport both innocent and health-

ful, and supplies a want deeply felt in ministerial life and labor." — *Rev. John L. Scudder.*

"The geologist, botanist, artist, and astronomer can all find in the tricycle, not a hinderance to their beloved pursuit, . . . but a means whereby their existing pursuits of knowledge and pleasure may be facilitated." — *Walter D. Welford.*

"It may be interesting to some to learn that I have been the great promoter of the cause in this town of Brighton, more especially amongst the fair sex, from whom I am constantly receiving thanks for having, in the first instance, induced them to mount the tricycle." — *Henry Belcher, M.D.*

"Young and middle-aged ladies can learn to ride the tricycle with the greatest facility, and they become excellently skilful." — *B. W. Richardson, M.D., F.R.S.*

"We think we have shown two things: that the bicycle or tricycle can be practically and profitably used by physicians as an adjunct to, or even in place of, the horse; and that it solves, beyond any question, the problem of exercise for a very large class of our patients." — *J. F. Baldwin, M.D.*

"This summer I have turned both my horses out to grass, and have trusted to my bicycle alone, doing on an average about fifty miles a day. I find I get through my day's work with less fatigue than

on horseback, and without the monotony of driving." — "*A Country Surgeon*," *in The Lancet*.

"I am very glad that the League of bicyclers is so very prosperous and flourishing. They have attained so large a development, and command so large a share of public attention and respect, I can only say now that, having made so good a start, I hope you will go ahead." — *Hon. Smith Ely, Jr.*

"The tricycle is, in fact, now with me a not uncommon prescription, and is far more useful than many a dry, formal, medicinal one which I had to write on paper." — *B. W. Richardson, M.D., F.R.S.*

"The tricycle is becoming every day more fashionable among ladies; and I am very glad to know that it is so." — "*A Family Doctor*," *in Cassel's Family Magazine*.

"I had ridden 994 miles (from Land's End to John o' Groat's) in 13 days, less 45 minutes. This gives an average of 76 to 77 miles a day. I had no difficulty in rousing the landlord, and was soon asleep." — *Hon. I. Keith Falconer*.

"A general adoption and proper use of the bicycle and tricycle will result in a national blessing, by making us a more vigorous, hardy, moral, and, therefore, a more happy people." — *S. M. Woodburn, M.D.*

"I was half a century old before I ever mounted one, and am now riding mine for the third season, and with much individual benefit. I have ridden my bicycle with ease and pleasure twenty-five miles in an afternoon over our country roads, which are not the best, making several professional calls during the time." — *G. E. Corbin, M.D.*

"The bicycler is, indeed, the modern Asmodeus. In him is realized the myth concerning the traveller with the seven-league boots and the invisible cloak. He can swiftly betake himself to remote regions, can see and hear all things, while his own presence is undisclosed." — *Karl Kron.*

"I shall rejoice to see the time when this exercise shall be as popular amongst girls and women as tennis and the dance; for the more fully the physical life of our women is developed, the better for men as well as women." — *Dr. B. W. Richardson.*

"I kept taking my road practice on level ground and in seclusion, 'at 5 o'clock in the morning.' Then followed the riding up of gradual ascents, with equally gradual success. Then short runs of two and more miles, and I began to use my bicycle in my regular business, which I have kept up ever since, with increasing interest and never-ceasing exhilaration." — *Rev. S. Hamilton Day.*

"Tricycle-riding, if not carried to excess and weariness, relieves brain fatigue and incipient con-

gestion of the liver; it causes the kidneys to act more freely and lightens the whole system; it banishes *ennui* and lowness of spirits, strengthens the whole muscular system, induces a free action of the skin, braces the nerves, and insures a healthful sleep."—"*A Family Doctor*," *in Cassel's Family Magazine.*

"To busy brain-workers, the bicycle is a God-send; almost, if not quite, a necessity."—*Dr. Blackham, President of the American Society of Microscopists.*

"I have myself been made a new man by the use of this machine. I was broken and unnerved by long study and pastoral-work. The bicycle fell in my way, and I learned to ride, more as a pastime than with serious intent. . . . As an instrument for the restoration of weakened frames to strength and health, I believe it has no equal."—*Rev. Hermon F. Titus.*

"It is a pleasure to me to note that few of the earlier riders have turned from bicycling; it is rare indeed that an old 'cycler relinquishes his wheels."—*H. B. Hart.*

"A contractor and builder in Pennsylvania writes: 'I am using my 'wheel' night and day to make business calls, and conveying hardware and other things. . . . I would not exchange my bicycle for the best horse in the country.' "—*The Wheelman.*

"The tricycle is coming rapidly into favor, and will be the favorite of the ladies, and of such men as are too old, too timid, or too weak to ride the bicycle; . . . but for the young, active, and enterprising of *mankind*, the bicycle is the ideal steed. . . . It is the coming horse for doctors and for patients."—*George E. Blackham, M.D.*

"Talk about frightening horses! there isn't a man on New York island that has ridden as many miles for the last twenty years in Central Park as I have; and I have driven all kinds of horses, from one to four, and I never saw one yet wink at a bicycle."—*Mr. Clarkson N. Fuller.*

"A great preacher says: 'Living a religious life is like riding the bicycle: you must go on or come down.' I find it a powerful teacher of the importance of having 'a single eye.'"—*Rev. J. Benson Hamilton.*

"After an early breakfast mount your Columbia, and take a wild run up hill and down for just one hour. Return to your study or place of business, kindle up the fire, and be surprised, as you will be, to see how smoothly the mental engine does its work, accomplishing twice the work in the ordinary time. Try it, and be convinced, as you will be. Then, ten years from now, thank the writer for calling your attention to the wheel."—*Rev. C. E. Bristol.*

"I have another friend who is the working editor of one of our largest church papers, who was almost broken down when he took to the bicycle, a few years ago, who now does most heroic work all the year round, sleeps sound, eats heartily, and has renewed his youth, as his active, lithe step and vigorous articles testify. He wheeled himself up the hill again to perfect health." — *Rev. S. L. Gracey.*

"The pleasures from being a rider, the agreeable change from carriage-riding, the exercising of muscles ordinarily but little used by the physician, and thus assisting in keeping the balance in the economy so necessary for perfect health, and other advantages, which need not be spoken of in this connection, lead us to the inevitable conclusion that the bicycle will soon be as indispensable to the physician as his horse." — *J. A. Chase, M.D.*

"A LADY'S TESTIMONY. — A recent recruit from the fair sex, in bearing evidence as to the utility of the tricycle, writes: 'My sister and myself have just returned from a tour on a Sociable, having ridden from Leeds to Woodbridge (Suffolk), and home again by Halstead and Walden (Essex), or a total of 470 miles whilst we have been away; and, as we have had such a successful time of it in every respect, we intend having another tour next year.'" — *The C. T. C. Gazette.*

"I can ride forty miles on the tricycle, experienc-

ing, I can safely say, less fatigue than from walking ten, or from riding on horseback twenty, although I am a practiced hand in both the last-named exercises all my life through; while I am comparatively a novice on the tricycle." — *Dr. B. W. Ward.*

"Personally, the equipage is a comfort to a cleric, in view of the etiquette expected from him. His long coat-tails wave in vacancy, unsoiled by either wheel; his boots have been out of the mud every inch of the way; one hand on the steering-handle, the other is free to lift the hat or hold an umbrella from rain or heat. The luggage-bag carries all he needs for his work or play. Within three or four weeks the tricycle becomes a part of his body . . . . Of the physical benefit derived from tricycling, there can be no question." — *Rev. F. H. Houghton.*

"A brother clergyman informed me that he had received great benefit from riding, and, being in delicate health myself, in the spring of 1881 I determined to try the experiment. Since that date I have taken regular exercise on the wheel, in runs of half a mile up to forty miles a day. I have received great benefit from the practice." — *Rev. A. O. Downs.*

"From the saddle we perceive things which are hidden from them who only walk upon the earth. Our senses are more acute, the sunshine seems

brighter to us, and nature is more lovely. We climb the forbidding hills, and rejoice in the struggle, or we dash across the plain with a wild sense of freedom and power, which no one ever knows until he rides the magic steed." — *C. E. Hawley, C.E.*

"Our conclusion, then, from our brief acquaintance with the machine, is, that with all its various incidents, pleasurable and otherwise, it 'pays' the professional man to bicycle; and if he has sons of ten years or more nothing can be used to greater advantage as a means of recreation, and at the same time as an assistant to moral influence, than the 'wheel.'" — *Rev. L. A. Bosworth.*

"For more than a year I have been accustomed to forget the cares incident to the school-room by an occasional ride of an hour on the nerveless but nerve-resting wheel. I have found daily relaxation, and that cheering sense which wheelmen know of increasing power, of reserve force, while slowly climbing and swiftly coasting our long-swelling Wisconsin hills." — *R. De Lacy Evans.*

"In nine cases out of ten walking or horseback-riding, as a means of exercise, is a failure. Resolve and resolve, as many of us do, yet we neglect it still, are prematurely 'shelved,' and call it 'a mysterious Providence.' Learn the easy art of bicycling and all this is changed." — *Rev. C. E. Bristol.*

"The wheel is always at hand. Epizoötic hath

no terrors for it; distance does not furnish excuse for inactivity; sunlight and open air are no longer unknown quantities in human life. Exercise can be taken, where it should be, in the open air. A few moments suffice to put the city behind us, and then green fields, blue sky, fresh air — all are ours. Every muscle is brought into play, from the soles of the feet to the head; from the hips down to propel, from the hips up to control, the machine." — *Rev. O. P. Gifford.*

"I simply wish to give my voice heartily and cordially in favor of the bicycle. If I could not get another I would not give up mine for its weight in solid silver. I wouldn't give it up for its weight in gold. For fifteen years, up to six months ago, I lost from three to six and eight days every month on my back, with incurable, stubborn sick headache. Since I have been riding the bicycle I have lost only two days from that cause. I haven't spent a dollar for a doctor since I have had a bicycle." — *Rev. George F. Pentecost.*